

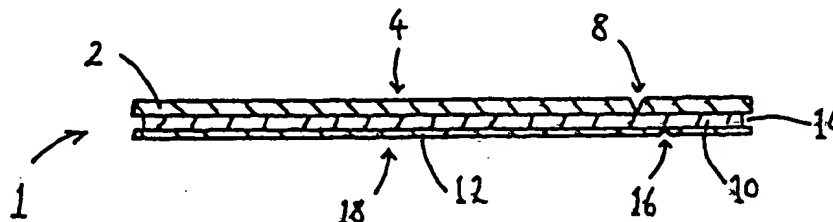


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(54) Title: LAMINATE**(57) Abstract**

The present invention relates to a laminate and more specifically to items of stationery comprising such laminates, more specifically business cards comprising such a laminate. A business card (1) embodying an aspect of the present invention includes a first layer of face material (2), a second layer of a release sheet (12) and a layer of adhesive (10) sandwiched therebetween. The face sheet (2) includes a first line of weakness (8) and the release sheet (12) includes a second line of weakness (16) such that the first line of weakness (8) is parallel to and offset from the second line of weakness (16). Such a business card can be separated into up to four separate portions, two of which include an adhesive layer for adhering those portions to respective suitable substrates. The business card (1) includes a face sheet outwardly facing surface (4) and a release sheet outwardly facing surface (18), either or both of which are printable with indicia.



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Laminate

The present invention relates to laminates, and more specifically, but not exclusively to items of stationery, in particular business cards.

One of the aims of the present invention is to provide a laminate which is easily separable into laminate portions, or delaminated, but prior to separation or delamination is capable of retaining a degree of rigidity.

According to a first aspect of the present invention, there is provided a laminate comprising a first layer, a second layer and an adhesive layer therebetween, the first layer and the second layer each including a respective line of weakness, the first layer line of weakness being offset from the second layer line of weakness.

The offset lines of weakness work in conjunction with each other to function as a stepped joint in the laminate, so as to provide a means for easily separating the laminate into separate components. This stepped joint type arrangement of offset lines of weakness enables the laminate to retain at least a portion or degree of the structural strength and rigidity of the laminate material without the lines of weakness. This is in marked contrast to laminate materials which include a line of weakness in each of the laminate layers such that the lines of weakness are not offset from each other, ie. the two lines of

weakness are juxtaposed one with the other, or superimposed, one over the other, wherein the laminate material is easily bent and distorted about the juxtaposed or superimposed lines of weakness. In such cases the lines of weakness effectively form a hinge in the laminate material, about which a portion of the laminate material may rotate.

In the present laminate material, there is preferably an area of adhesive in contact with both the first layer and the second layer between the respective offset lines of weakness, the area of adhesive forming a "bridge" between the lines of weakness. The larger this bridge of adhesive, the greater will be the structural strength and rigidity of the resultant laminate material. The laminate will only experience a rotational movement about one of the lines of weakness when sufficient force is applied to a portion of the laminate spaced from the offset lines of weakness, normal to the plain of the laminate, to cause separation of one of the first and second layers from the adhesive layer, or failure of the adhesive layer itself.

Preferably, the first layer line of weakness is parallel to the second layer line of weakness and more preferably, the first and second layer lines of weakness run substantially continuously between respective edge portions of the laminate.

30

For the laminate to retain a relatively high proportion of structural rigidity, the offset between the first

layer line of weakness and the second layer line of weakness is preferably at least 0.01mm and more preferably at least 0.1mm. This provides a bridge of adhesive which is such that hinging of the laminate about one of the lines of weakness is resisted.

For the offset lines of weakness to function efficiently as a stepped joint, the offset between the lines of weakness is preferably not more than 13mm, more preferably not more than 10mm and most preferably not more than 3mm.

In a preferred embodiment, one of the first layer and the second layer includes a release coating in contact with the adhesive layer such that the release coating, and thus the layer including the release coating, is releaseable from the adhesive layer. The release coating preferably comprises a release agent such as a silicon-based polymer which is adhered less strongly to the adhesive layer than the other of the first layer and second layer, i.e. the layer which does not include the release agent.

The term adhesive layer used herein includes adhesive materials such as pressure sensitive adhesives, dry tack adhesives and static stick adhesives, and also micro hook and loop type adhesive materials such as velcro (trade mark) or any other suitable adhesive medium. In a preferred embodiment, the adhesive layer comprises a permanent adhesive composition coating, more preferably, a permanent acrylic pressure sensitive adhesive composition coating.

Preferably, the first layer line of weakness defines a first layer major portion and a first layer minor portion wherein the first layer major portion and the first layer minor portion are separable from each other about the first layer line of weakness, and the second layer line of weakness defines a second layer major portion and a second layer minor portion, wherein the second layer major portion and the second layer minor portion are separable from each other about the second layer line of weakness. This enables the laminate material to be separable into four separate components, namely the first layer major portion, the first layer minor portion, the second layer major portion and the second layer minor portion by a combination of delamination and separation about the lines of weakness. This can be achieved either by first delaminating the first layer from the second layer and then separating each of the first layer and the second layer into their respective major and minor portions, or alternatively, separating the laminate into two laminate portions, the first laminate portion comprising the first layer major portion and the second layer major portion laminated one to the other, and the second laminate portion comprising the first minor portion and the second minor portion laminated one to the other; and then delaminating the two major portions and the two minor portions.

In a preferred embodiment, at least one of the first layer line of weakness and the second layer line of weakness includes a line of perforations, more preferably, a line of micro-perforations. Additionally

or alternatively, one of the first layer line of weakness and the second layer line of weakness may include a face slit. By face slit it is meant a cut which either penetrates all the way through the
5 respective layer or penetrates through only part of the respective layer in the thickness and direction. In a particularly preferred embodiment, the first layer line of weakness is defined by a line of micro perforation and the second layer line of weakness is defined by a
10 face slit.

The lines of weakness may be effected by any mechanical or chemical means, such as acid or thermal treatment, emitted energy as in radio frequency, laser or any
15 suitable energy source, or by any other suitable combination of devices, methods or techniques.

Preferably, the first layer, the second layer and the adhesive layer have substantially the same area and are
20 substantially co-extensive. However, it is not essential that this is so. For example, the adhesive layer may be smaller in terms of surface area than the first layer and/or the second layer. Furthermore, the adhesive is preferably a continuous layer, but it may
25 alternatively be discontinuous.

When the laminate is separated along both the offset lines of weakness, the bridge of adhesive is exposed on one of the two resulting laminate portions. This strip
30 of adhesive permits that portion of the laminate to be temporarily affixed, as desired, to a suitable substrate. As the bridge portion of the adhesive (ie.

that portion of adhesive located between the two lines of weakness) is preferably relatively narrow compared to the surface area of that portion of the laminate, it will function as a re-positional adhesive, despite preferably being a permanent adhesive composition. Thus, owing to the relatively small exposed surface area of the adhesive layer, the portion of the laminate which includes the exposed bridge portion of the adhesive layer can easily be removed from the first substrate as desired and re-affixed to a different substrate.

Additionally, the other portion, namely the portion without the exposed relatively narrow portion of the adhesive layer may include an exposed portion of the preferred release coating on one of the two laminate layers. This exposed portion of release coating permits easy delamination of the two laminate layers of that portion, which of course will then totally expose the adhesive layer adhered to one of the laminate layers of that portion of the laminate. This allows the layer having the thus exposed adhesive to be permanently affixed to a substrate.

It will be appreciated that exposure of the adhesive layer is possible for both laminate portions of the separated laminate, and as such both of the respective laminate layers which have the adhesive layer adhered thereto may be permanently affixed to any suitable substrate.

According to a second aspect of the present invention

there is provided an item of stationery comprising a laminate according to the first aspect of the present invention. In a preferred embodiment, the item of stationery is a business card.

5

Conventionally, business cards are stored systematically, that is in some kind of filing system, for example a business card folder or card index system. Known business card filing systems share the property, and problem, of being bulky. One of the aims of the present invention is to address this problem.

A card according to a preferred embodiment of the second aspect of the present invention may, for example, be printed with useful indicia, e.g. contact details on the detachable portion, which may be separated from the residual portion and stored more compactly than the whole card could be.

20 The business card may include a plurality of detachable portions. That is to say, each laminate layer may include a plurality of lines of weakness.

The lines of weakness are preferably offset from a centre line of the business card, so that the business card is separable into major and minor portions.

The lines of weakness preferably run parallel to each other and substantially continuously between edge portions of the business card, to facilitate easy separation. Since typical business cards are rectangular, the lines of weakness are preferably

30

substantially parallel to an opposite pair of edges of a rectangular laminate, so that the separable portions are each themselves rectangular.

- 5 At least one of the lines of weakness is preferably a die-cut and more preferably a continuous die-cut through or at least partially through one of the laminate layers of the business card. This arrangement facilitates clean separation of the detachable and
10 residual portions. However, alternatives are possible, for example a line of weakness may be provided by a line of perforations. Such perforations are preferably micro-perforations, to reduce the visual impact before separation. Such micro-perforations may, for example
15 be produced by mechanical means or by a laser.

The intact business card, before separation of the preferably major and minor portions, is preferably of a standard size for business cards, to allow storage in a
20 conventional business card filing system.

A preferred standard size is approximately 86 x 55mm.

- In a preferred embodiment, the business card includes a
25 sheet of face material as the second laminate layer, wherein a surface of the sheet of face material (the "rear surface") is preferably provided with the adhesive layer, and the face material is mounted on the first laminate layer which is in the form of a release
30 sheet, the release sheet being removable to expose the adhesive layer on the face material. The release sheet is preferably silicon coated on the surface which

contacts the adhesive layer. Preferably at least one of the portions of the face material is provided with an adhesive layer and further preferably the adhesive layer substantially entirely covers the rear surface of that portion. In such embodiments, at least that
5 portion of the face material (whether or not separated from the other portion) may be stuck to a suitable substrate.

10 As an alternative to the embodiment described immediately above, the business card may include a backing sheet provided with an adhesive layer, such that the backing sheet is mounted on the rear surface of the face material and the face material acts as the
15 release sheet. Preferably the rear surface of the face material is coated with a silicon-based polymer.

Thus, one of the portions of the face material or the backing sheet may or may not include the layer of
20 adhesive.

Preferably the adhesive used in embodiments of the first aspect of the invention is a permanent adhesive. However, for certain applications a re-positional
25 adhesive, more preferably a re-positional, pressure sensitive adhesive, may be preferred. Any other type of adhesive that is suitable for use with the business cards of this aspect of the invention may also be used.

30 Desirably, the rear surfaces of both of the separable portions of the face material are provided with an adhesive layer and are mounted on a release sheet, such

that both of the separable portions of the face material, when separated about the line of weakness between them, may be independently adhered to other objects. Even more desirably, substantially the entire rear surface of the face material is provided with an adhesive layer and is mounted on a release sheet, the release sheet being substantially the same size as and co-extensive with the face material. Such embodiments give a better appearance to the reverse of the business card than embodiments in which the release sheet extends incompletely over the reverse of the face material, or alternatively extends beyond the edge of the face material on one or more edges of the business card.

Preferably the release sheet is of a similar appearance to the face material. The release sheet is more preferably made from a silicone-coated material, most preferably silicone-coated paper.

The face material and/or the release sheet or backing sheet and/or the adhesive may be transparent or translucent.

Either the "front", adhesive-contacting surface of the release sheet (ie. the inwardly facing surface of the laminate second layer), or its other "rear" surface (ie. the outwardly facing surface of the laminate second layer), or both is/are preferably printable.

Furthermore, printable adhesives are known and may be used in conjunction with appropriate embodiments of the invention.

In certain embodiments, a small margin at an edge portion of the release sheet is preferably unadhered to the face material, so as to facilitate delamination of the release sheet from the face material.

5

By the term "business card" it is meant any suitably sized and shaped sheet of stationery material bearing (e.g. by having printed thereon) indicia indicative typically of the name and/or address and/or contact numbers (e.g. telephone, facsimile, telex, cable, e-mail or other electronic communication details) of a person or company, which business card may be given to third parties.

15 According to a third aspect of the present invention there is provided a laminate precursor sheet comprising a plurality of laminates according to the first aspect of the invention, more preferably, there is provided a stationery precursor sheet comprising a plurality of items of stationery according to the second aspect of the present invention.

In preferred embodiments of the third aspect of the present invention, the stationery precursor sheet includes a plurality of business card blanks. That is to say laminate portions for use as business cards, but which have yet to have the indicia applied thereto.

Stationery precursor sheets are commonly used in the stationery field as they enable a plurality of items of stationery, eg. business cards, to be printed simultaneously, thus cutting down on the time required

to produce a large batch of such items. The stationery precursor sheet blank is fed into a suitable indicia application apparatus eg. a printing apparatus, where upon a plurality of items of stationery are printed simultaneously. After printing, the stationery precursor sheet is then separated by any suitable method eg. by guillotining the sheet, into the desired plurality of items of stationery.

10 Accordingly, since each of the individual items of stationery include a first layer line of weakness and a second layer line of weakness offset from each other, the stationery precursor sheet and stationery precursor sheet blank both include a plurality of first layer
15 lines of weakness and second layer lines of weakness such that after processing the stationery precursor sheet can be separated into the individual items of stationery, each having a first and second line of weakness.

20 According to a fourth aspect of the present invention, there is provided a method of producing an item of stationery according to the second aspect of the present invention, the method including selecting a
25 suitable stationery precursor sheet blank according to the third aspect of the present invention, marking the stationery precursor sheet blank with a plurality of indicia to form a stationery precursor sheet and separating the stationery precursor sheet into the
30 individual items of stationery, each including a respective set of indicia.

An embodiment of the invention in one of its various aspects will now be described in detail, by way of example only, with reference to the accompanying drawings in which:-

5

Figure 1 shows a front surface of a business card embodying the second aspect of the invention;

10 Figure 2 shows the business card of figure 1 when a detachable portion of the card is being detached;

Figure 3 shows a section through the business card of figure 1, along line AA;

15 A business card 1 is substantially rectangular and has a layered structure, shown in figure 3. A face sheet 2, made of face material (e.g. card) is printable on a front surface 4.

20 A first line of weakness 6, provided by a die-cut face slit or groove 8 in the face sheet 2, runs perpendicularly to and between opposite long edges of the face sheet. The first line of weakness 6 is offset from the centre of the face sheet, thereby dividing the
25 face sheet into minor and major rectangular portions, which will be referred to as the detachable and residual portions 2a, 2b, respectively. The portions are separable along the first line of weakness 6. Figure 2 shows the detachable portion 2a being
30 separated from the residual portion 2b.

An adhesive layer 10 is sandwiched between the rear

surface of the face sheet 2 and a release sheet 12.
The release sheet 12 may be delaminated from the
adhesive layer 10, leaving the adhesive layer 10 on the
rear surface of the face sheet 2. The face sheet may
5 then conveniently be adhered to a surface, for example
a business card filing system. The release sheet 12
consists of a silicone-coated paper.

As previously indicated, the detachable and residual
10 portions 2a, 2b of the face sheet are separable, and
this separation may be combined with simultaneous
delamination from the release sheet, so that the
detachable portion 2a of the face sheet is
simultaneously separable both from the release sheet 12
15 and from the residual portion 2b of the face sheet.
The detachable portion may then be adhered to another
surface and the adhesive layer on the residual portion
remains covered by the release sheet, or at least a
residual portion of the release sheet. Figure 2 shows
20 the detachable portion 2a being thus separated. Of
course, the converse can apply, so that the residual
portion 2b is separated from the release sheet 12 and
detachable portion 2a.

25 The residual portion 2b is of a standard business card
size, being approximately 86 x 55mm. The detachable
portion 2a is approximately 14 x 55mm. It will be
appreciated of course, that the dimensions given herein
may be varied as desired, for example it may be desired
30 that the intact (ie. non-separated) business card is of
the standard business card size.

In the intact business card, the release sheet 12 and face sheet 2 are substantially co-extensive. However, the adhesive layer 10 does not extend quite to all edges of the face and release sheets, leaving at least one small, adhesive-free margin 14 adjacent the
5 adhesive layer and between the face and release sheets.

This margin facilitates separation of the face and release sheets, e.g. by allowing insertion of a
10 fingernail.

The release sheet 12 also is provided with a line of weakness 16, in the form of a line of micro perforations in which for a 6mm length, there are six
15 teeth of 0.6mm each (ie. apertures cut through or at least partially through the release sheet) and five ties (ie. the areas or islands of the release sheet material between the teeth) of 0.4mm each, which in the intact business card lies substantially parallel to and
20 offset from the first line of weakness 6 in the face sheet 2 by 1.66mm. This allows trimming of the release sheet to substantially the same size as the remaining portion of the face sheet when one of the portions 2a, 2b has been separated from the other portion and the
25 release sheet 12. The offset prevents undue weakening of the intact business card as a whole, which would occur if the two lines of weakness 6, 16 were superimposed.

30 A rear surface 18 of the release sheet 12, which provides an outwardly facing surface of the intact business card 1, is similar in appearance to the front,

outwardly facing, surface 4 of the face sheet 2, so that the front and rear surfaces of the intact business card are similar in appearance.

5 The front or inwardly facing surface 20 of the release sheet 12, which in the intact business card contacts the adhesive layer 10, is also of similar appearance to the face sheet. This reduces the visual effect when one portion of the face sheet 2 is separated both from
10 the remaining portion of the face sheet and the release sheet 12 without trimming of the release sheet. In such circumstances, a portion of the release sheet 12 is left protruding from the face sheet (as shown in figure 2).

15

The face sheet 2 is less thick than typical business cards and is approximately 0.22mm thick. The release sheet is approximately 0.13mm so that the total
20 thickness of the intact business card 1, i.e. of the combination of face sheet 2, adhesive layer 10 and release sheet 12 is typical of a business card, ie. approximately 0.35mm thick. The adhesive is applied so that it has a coverage of about 18 g/m².

25 The surface mainly intended for printing is the front, outwardly facing surface 4 of the face sheet 2. It will be needed that both portions of the face sheet are printable, so that for example residual portion 2b may be printed as a standard business card, with essential
30 contact details printed more concisely or more compactly on the detachable portion 2a. The detachable portion 2a can be detached and stored more compactly

than a standard business card, without the intact business card 1 having to be of a smaller size (and thus possibly less visually engaging) than a standard business card.

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However, other surfaces of the card are also printable, namely: the rear or inwardly facing surface of the face sheet 2 (i.e. the surface in contact with the adhesive layer 10) and both surfaces 18, 20 of the release sheet 10 12. Furthermore, if an appropriate adhesive is used, a surface of the adhesive layer 10 may be printable.

The business card 1 may be assembled by coating the release sheet 12 with the adhesive layer 10 and then 15 bringing the rear surface of the face sheet 2 into contact with the adhesive. In such a case, the printable surface of the adhesive layer 10 (if it is desired that a surface of the adhesive layer 10 be printable) is its front surface (i.e. the surface which 20 in the intact business card contacts the face sheet 2).

The above description is given by way of example only and modifications within the scope of the invention will be apparent to those skilled in the art.

CLAIMS

1. A laminate comprising a first layer, a second layer and an adhesive layer therebetween, the first layer and
5 the second layer each including a respective line of weakness, the first layer line of weakness being offset from the second layer line of weakness.
2. A laminate according to claim 1 wherein the first
10 layer line of weakness is parallel to the second layer line of weakness.
3. A laminate according to claim 2 wherein the first
15 layer line of weakness is offset from the second layer line of weakness by at least 0.01mm
4. A laminate according to claim 3 wherein the offset is at least 0.1mm.
- 20 5. A laminate according to any proceeding claim wherein one of the first and second layers includes a release coating in contact with the adhesive layer such that the release coating is releasable from the adhesive layer.
- 25 6. A laminate according to claim 5 wherein the release coating includes a silicon-based polymer.
7. A laminate according to any preceding claim wherein
30 the adhesive layer comprises a permanent adhesive composition.

8. A laminate according to any preceding claim wherein the first layer line of weakness defines a first layer major portion and a first layer minor portion wherein the first layer major portion and the first layer minor portion are separable from each other about the first layer line of weakness; and the second layer line of weakness defines a second layer major portion and a second layer minor portion wherein the second layer major portion and the second layer minor portion are separable from each other about the second layer line of weakness.

9. A laminate according to any preceding claim wherein the first layer line of weakness and the second layer line of weakness run substantially continuously between respective edge portions of the laminate.

10. A laminate according to any preceding claim wherein at least one of the first layer line of weakness and the second layer line of weakness includes micro perforations.

11. A laminate according to claim 10 wherein one of the first layer line of weakness and the second layer line of weakness includes micro perforations and the other of them includes a face slit.

12. A laminate according to any preceding claim wherein the first layer, the second layer and the adhesive layer have substantially the same area and are substantially co-extensive.

13. An item of stationery comprising a laminate according to any one of claims 1-12.

5 14. An item of stationery according to claim 13 wherein the item includes indicia on an outwardly facing surface of at least one of the first layer and the second layer.

10 15. An item of stationery according to claim 14 wherein the item of stationery is a business card.

15 16. A stationery precursor sheet comprising a plurality of items of stationery according to any one of claims 13 to 15.

Figure 1

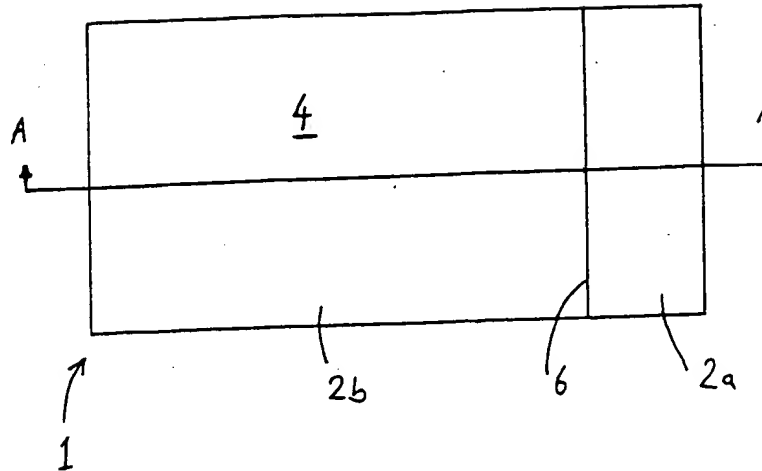


Figure 2

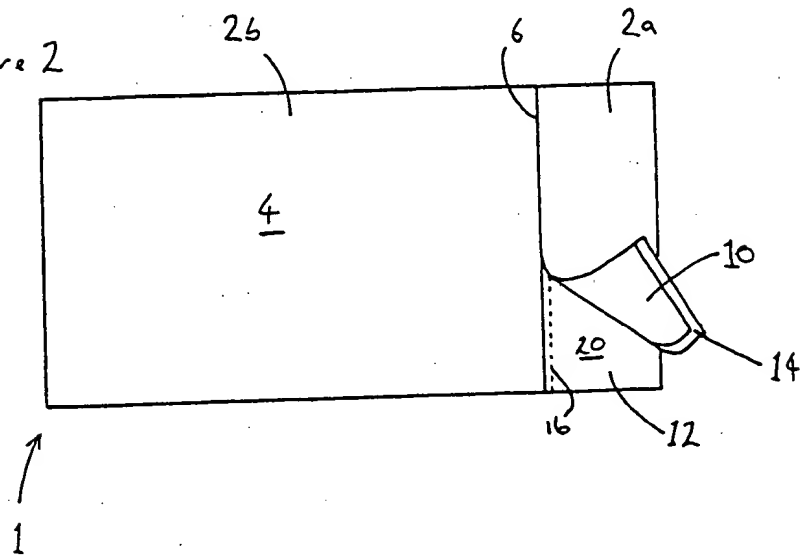
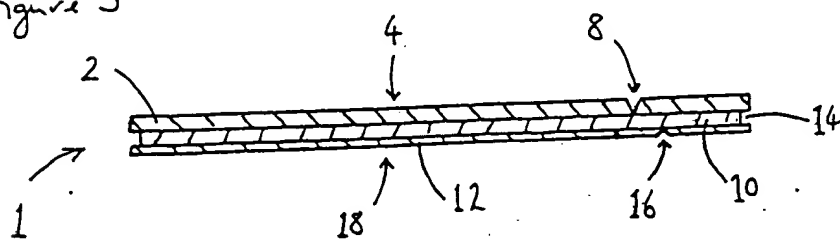


Figure 3



INTERNATIONAL SEARCH REPORT

In ternational Application No

PCT/GB 99/03935

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B42D15/02 G09F3/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B42D G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 724 479 A (DANEL FERRY) 15 March 1996 (1996-03-15) page 3, line 25 -page 5, line 36; figures ---	1,2, 5-10,13, 14,16
X	US 5 318 325 A (IPSEN RICHARD E) 7 June 1994 (1994-06-07) column 3, line 32 -column 4, line 2; figures 1-3 column 5, line 40 - line 61 ---	1,2,5-9, 12-14,16
X	US 5 031 939 A (WEBENDORFER STEPHEN D ET AL) 16 July 1991 (1991-07-16) column 4, line 52 -column 5, line 62; figures --- -/--	1,2,5-9, 12-14,16

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

8 February 2000

Date of mailing of the international search report

21/02/2000

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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